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ABSTRACT

Although many studies have used information at the school level to measure the degree of racial segregation between schools, the absence of more detailed data has limited the analysis of segregation within schools. Using a rich set of administrative data on North Carolina public schools, this paper examines patterns of enrollment both across and within schools, allowing researchers to assess the comparative importance of segregation of each type and how they interact. To examine patterns in upper as well as lower grades, researchers perform separate tabulations for 1st, 4th, 7th, and 10th grades. The data make possible what they believe to be the most comprehensive study of within-school segregation undertaken in two decades, one that covers schools in all 117 districts of a large and racially diverse state. Using data for 1994-1995 and 2000-2001, they find marked increases in segregation over the period. In addition, they find that within-school segregation was much less important in the elementary grades than in 7th and 10th grades and that segregation of both types tended to be greatest in districts with nonwhite shares between 50 and 70 percent. Graphs and tables are appended. (Contains 27 references.) (Author/SM)

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Segregation and Resegregation in North Carolina's Public School Classrooms*

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August 2002

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Although many studies have used information at the school level to measure the degree of racial segregation between schools, the absence of more detailed data has limited the analysis of segregation within schools. Using a rich set of administrative data on North Carolina public schools, we examine patterns of enrollment both across and within schools, allowing us to assess the comparative importance of segregation of each type and how they interact. To examine patterns in upper as well as lower grades, we perform separate tabulations for 1st, 4th, 7th, and 10th grades. The data make possible what we believe to be the most comprehensive study of within-school segregation undertaken in two decades, one that covers schools in all 117 districts of a large and racially diverse state. Using data for 1994/95 and 2000/01, we find marked increases in segregation over the period. In addition, we find that within-school segregation was much less important in the elementary grades than in 7th and 10th grades and that segregation of both types tended to be greatest in districts with nonwhite shares between 50 and 70 percent.

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Segregation and Resegregation in North Carolina's Public School Classrooms[1]

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This paper presents evidence on patterns of and trends in interracial contact in public schools in North Carolina, focusing on the importance of racial disparities within schools as well as conventionally measured disparities between schools. Employing detailed administrative data from North Carolina for the years 1994/95 and 2000/01, we investigate the degree to which students of different racial and ethnic groups are in classrooms together. We examine these classroom patterns as part of a broader consideration of school segregation within the districts and counties in the state. Six main findings emerge. First, measured segregation differed significantly across the state, both between and within schools. Second, within-school segregation was relatively unimportant in elementary grades but represented a large share of total segregation in grades 7 and 10. Third, segregation of both types tended to be highest in districts whose shares of nonwhites were between 50 and 70 percent. Fourth, segregation in schools was less pronounced than residential segregation. Fifth, segregation between whites and Hispanics was less than that between whites and blacks in grades 1, 4, and 7, but it was

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higher in grade 10. Sixth, school segregation, both between and within schools, increased over the period 1994/95 and 2000/01 in each of the four grades we examine.

Section I of the paper discusses the importance of within-school segregation and briefly reviews some previous related research on school segregation. Section II describes patterns of racial segregation in North Carolina public schools using conventional measures based on disparities between schools. Section III describes the data and methods used to identify enrollment patterns at the classroom level, and section IV employs these data to analyze segregation at the level of the classroom. Section V considers the relationship between racial composition and segregation, Section VI examines segregation within schools using a school-based measure, Section VII measures segregation on a metropolitan basis, and Section VIII concludes the paper.

I. Previous Research on Interracial Contact and Segregation Within Schools

From the earliest days of school desegregation, social scientists have documented the impact of policy by using descriptive measures of interracial contact and segregation. One common measure of interracial contact is the exposure rate, which gives the racial composition of the school attended by the typical student of a given racial group. Another measure, reflecting racial isolation, gives the percentage of students of a given racial group who attend schools consisting predominantly of members of that same group. Measures of segregation, typically expressed in the form of indices bounded by 0 and 1, assess the degree of unevenness of racial compositions across constituent units such as schools. Among the indices that have been used in this way are the dissimilarity

index, the Gini coefficient, and the gap-based segregation index used in the present paper.[2]

Most of this previous research on segregation in schools has focused on racial disparities between schools or between districts, with comparatively little attention being given to racial disparities in the makeup of classrooms *within* schools.[3] The principal reason for the relative lack of attention paid to segregation within schools is lack of data: although numerous detailed surveys have been conducted to measure the racial composition of schools, comparatively little information is available on enrollment patterns within classrooms. Yet segregation within schools – manifested in differences in racial composition among individual classes – is an issue of great potential importance.

Where it exists, such segregation obviously diminishes the potential for interracial contact inherent in school assignment plans designed to desegregate schools.[4] In some cases segregation within schools has resulted from explicit, and sometimes blatant, practices. In the years immediately following legally mandated desegregation in the South, for example, some districts actually separated students by race using classroom partitions and segregated lunchrooms (Meier, Stewart, and England 1989, p. 50). More recently, a federal court ruled in 1994 that school officials in Rockford, Illinois, had

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[2] Among the many studies measuring segregation in schools are: Farley and Taeuber (1974), Coleman et al. (1975), Orfield (1983), Rivkin (1994), Clotfelter (1999), and Orfield and Gordon (2001).

[3] For the purposes at hand, we follow the convention in the literature and use the term "race" to include classifications of race and ethnicity. The categories covered in the empirical work in this paper are those commonly used in research on education issues: Hispanic, non-Hispanic white, non-Hispanic black or African American, Asian American, native American, and other.

[4] Presumably because such segregation within schools has been seen as a second line of defense against desegregation after outright resistance, it is sometime referred to as "second generation discrimination."

deliberately used a variety of policies to maintain racial segregation. One device was a magnet program in which white students were assigned to predominantly minority schools but taught throughout the day in separate classrooms. Another device was the use of pull-out programs for minority students, causing them to attend separate classes for much of the day (*People Who Care, et al. v. Rockford Board of Education, School District No. 205* 1994, pp. 915-916).

A less explicitly discriminatory policy that can also generate racially segregated classrooms within schools is academic tracking. Since tracking is based on the belief that teaching can be more effective when it is addressed to relatively homogeneous groups of students, assignments of students to tracks and, hence, classrooms should in theory be based on objective measures such as students' scores on aptitude tests. However, analyses of actual assignments to tracks in some districts have revealed racial bias. In the case of the Rockford district, for example, race as well as measured aptitude played a role in classroom assignments. Among students with similar scores on objective aptitude tests, whites were more likely to be assigned to honors classes than blacks.[5] Similar racial bias in the assignment to tracks in other districts has also been documented.[6]

To our knowledge the most comprehensive attempt to measure the amount of racial contact of students within-schools is Morgan and McPartland's (1981) examination of classroom assignments in 43,738 public schools in the fall of 1976. They found a

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[5] One consequence of Rockford's Gifted Program in one racially mixed school, for example, was to create "a school within a school" for white students (*People Who Care* 1994, pp. 916, 1012, 1026).

[6] For examples of findings and discussion of racial bias in tracking, see Oakes (1987), Oakes and Guiton (1995), and Mickelson (2001). For a more general discussion of tracking, see Loveless (1999).

small degree of intra-school segregation in elementary and middle school grades and a more pronounced degree in high schools.

Most of the studies of within-school segregation do not rely on indices to measure such patterns. Gamoran (1992) and Oakes and Guiton (1995), for example, examine the pattern of placements of students into academic tracks and present evidence that students of different racial groups faced different probabilities of being assigned to particular academic tracks, even after their measured achievement levels had been controlled for. Oakes (1994) and Mickelson (2001) analyze the effects of such placements on the racial composition of individual classes. In particular, Mickelson's study of high schools in Charlotte-Mecklenburg reveals a marked degree of segregation in some courses. Her findings imply that within-school exposure rates were lower than corresponding school racial compositions, but her calculations do not make it possible to determine the precise contribution of within-school segregation to overall segregation.[7]

II. Segregation in North Carolina: Conventional Measures

Before examining segregation at the classroom level in North Carolina, we briefly note the policy context affecting the state's public schools, describe the racial composition of the state's public schools, and apply conventional measures of segregation to school-level data to characterize segregation across those schools. Like all other Southern states, North Carolina's public schools have operated under various forms of federal oversight since 1954, although at this writing the period of deliberate racial

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[7] For a related analysis of various means of discrimination in schools, including disproportionate placement in special tracks, see Meier, Stewart and England (1989, pp. 82, 98-99). For an earlier study of interracial contact within a public middle school, see Schofield (1982)

balancing exemplified by the *Swann* decision appears to be coming to an end (Boger 2000). And, like several other states in the South and elsewhere, it introduced a test-based accountability program in the early 1990s and, in 1997, a formal school-based accountability system featuring widespread student testing, monetary rewards for successful schools, and greater scrutiny of unsuccessful ones (Ladd 2001). Moreover, a case in which plaintiffs challenged the adequacy of the state's system of financing schools has drawn new attention to the resources available for "at-risk" students.[8]

North Carolina, the nation's eleventh most populous state, has a sizable minority population, and it features many urban as well as rural school districts. Although the state has a small but rapidly growing Hispanic population, African Americans remain the largest minority group by far. Counting students in charter schools, the state enrolled some 1.3 million students in grades K-12 in 2000/01.[9] As a way of reflecting broad patterns in the state without undue complexity, we divided the state's 117 public school districts into 11 groups – the five largest districts, other urban districts in the state's three regions, and rural districts in the three regions, those regions being the Coastal Plain in the east, the Mountains in the west, and the Piedmont in the middle.[10] These divisions are shown on the state map in Figure 1, and the corresponding enrollments and racial compositions are shown in Table 1.

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[8] See *Leandro v. State of North Carolina* (346 N.C. 336, 488 S.E.2nd 249) and *Hoke County Board of Education and Asheville City Board of Education v. State of North Carolina* (2000 WL 1639686 (N.C. Super.)).

[9] Charter schools were included with the districts in which each was located, although they were administratively independent of those districts.

[10] All districts in counties that were 45% or more urban in 1990 were classified as urban, as were all city districts in any county with enrollments of at least 2,000 in 2001/02, not counting charter school enrollments. The boundaries between Coastal, Piedmont, and Mountain counties were taken from North Carolina Division of Travel and Tourism, *Yours to Discover: North Carolina State Parks and Recreation Areas* (1998).

All five of the largest districts are county-wide, as are a majority of all districts in the state. Charlotte-Mecklenburg, which includes the city of Charlotte, is the largest district in the state with 103,000 students in 2000/01, 53% of whom were nonwhite. Wake County, which includes the state capital of Raleigh, had 97,000 students, 37% of whom were nonwhite. The other three districts (and their major cities) are Guilford (Greensboro and High Point), Cumberland (Fayetteville), and Winston-Salem/Forsyth (hereafter referred to as Forsyth). Together, these five urban districts accounted for 28% of the state's public school students in 2000/01, roughly the same number as were contained in the state's remaining 32 urban districts. In racial composition, the Coastal Plain and Piedmont had roughly twice the proportion of nonwhite students as the Mountain region, as indicated by the map in Figure 2. Reflecting the state's moderately rapid overall growth rate, enrollments grew at an annual rate of 1.9% between 1994/95 and 2000/01, paced by growth rates over 3% in the state's two largest districts, Charlotte-Mecklenburg and Wake County.[11]

To summarize the extent of segregation in the schools, we employ an index based on the exposure rate, which is defined here as the percentage of nonwhite students enrolled with the typical white student. As conventionally calculated, based on school-level data, this exposure rate in district k is

$$E_k^* = [\ W_j\ \ \%NW_j\ ] /\ \ W_j, \qquad (1)$$

where W_j is the number of whites in school j and $\%NW_j$ is its nonwhite percentage. This exposure rate is simply a weighted average of the racial compositions of schools, where

[11] A listing of all of the state's 117 school districts in 2000/01 is given in Appendix A, along with their district group designation and information on their enrollment, racial composition, and segregation.

the shares of white enrollments are used as the weights. If all schools in a district were racially balanced, the exposure rate would reach its maximum value, which is equal to the nonwhite percentage in the district. At the other extreme, if whites and nonwhites attended entirely separate schools, the exposure rate would be zero, indicating that the average white student attended a school with no nonwhites. The segregation index we use is defined as the percentage gap between the maximum exposure rate, which is the nonwhite percentage, and the actual exposure rate of whites to nonwhites. This index thus measures the degree to which the actual distribution of students diverges from a racially balanced distribution. For district k, this gap-based segregation index is calculated as

$$S_k^B = (\%NW_k - E_k^*) / \%NW_k . \qquad (2)$$

For a district in which all schools reflect the overall racial composition of students, S_k^B takes on its minimum value of zero. By contrast, when schools are completely segregated, so that

$E_k^* = 0$, the index takes on its maximum value of 1.

A second, closely related concept is that of racial isolation, reflected by measures such as the percentage of nonwhites who are in schools with 90-100% nonwhite enrollment. Higher values indicate more racial isolation. In contrast to a measure of segregation such as S_k^B that implicitly corrects for the racial composition of the district, these measures of racial isolation are necessarily functions of the racial composition of the district.

Table 2 presents calculations using the segregation index S_k^B and the percentage of nonwhite students who attended schools that were 90-100% nonwhite. Data on each

school's enrollment in the 1994/95 and 2000/01 years were used to make the calculations, and weighted averages of the resulting segregation indices are given for the state and the 11 district groups described above. For the state as a whole, these indices were generally quite low in both years, suggesting that the state's public school districts were able to achieve a fairly high degree of racial balance across schools. By way of comparison, the average segregation indices of 0.10 and 0.13 for districts in the state are similar in magnitude to comparably defined indices in 1994/95 for Frederick Co., Maryland (0.10), Fairfax Co., Virginia (0.12), and Montgomery Co., Maryland (0.14) (Clotfelter 1999, Table 1, p. 492). However, the indices calculated for the five largest districts indicate considerable variation in the degree of measured segregation within individual districts. In 2000/01, segregation in Guilford, Forsyth, and Mecklenburg exceeded the state average. The second segregation measure, the percentage of nonwhites in schools that were 90-100 percent nonwhite, also indicates little of the extreme concentration of minority enrollments that was both a hallmark of de jure segregation and is a characteristic of many contemporary urban areas.[12] For the 2000/01 year, therefore, these two segregation measures based on school-level data indicate that public schools in North Carolina were, on average, not highly segregated in comparison to other districts in the U.S., although some districts certainly stand out as having markedly more pronounced segregation.

[12] Similar measures are given for a number of urban school districts in the 1950s and 1960s in U.S. Commission on Civil Rights (1967, Appendix Table A.3) and for large metropolitan areas in 1994/95 in Clotfelter (1999, Table 3, p. 494). Few of the districts in either of these tables have measures as low as 6.7%, the state average in North Carolina in 2000/01.

A comparison of measures for 1994/95 and 2000/01 shows a widespread trend toward increasing segregation in the state. For the state the average segregation index and the percentage of nonwhites in largely nonwhite schools each increased by about a third. The segregation index increased in all but one of the district groups, rising markedly in Winston-Salem/Forsyth and Charlotte-Mecklenburg. Among the districts and district groups, Forsyth stands out. In that district, the percentage of nonwhites in 90-100% minority schools jumped from zero to 20%. Smaller increases were evident in Guilford and other urban Coastal districts. In section VII of the paper we examine trends in segregation as measured on a metropolitan area basis.

An interesting footnote to this rising segregation is the role played by charter schools. Arising after 1994/95 and constituting only 1.2% of the state's overall enrollment in 2000/01, charter schools were responsible for part of the rise in segregation over the period. If charter schools had been omitted fron. the calculations of segregation in 2000/01, the average value of S_k^B for the state would have been 0.12 rather than 0.13, and the percentage of nonwhites in 90-100% nonwhite schools would have been 6.1 rather than 6.7. These comparisons suggest that the growth in charter school enrollments was responsible for more than a quarter of the increase in overall school segregation over the period.[13] Charter schools have this effect because they include a large number of predominantly black schools. This outcome has created a dilemma for North Carolina policy makers, who responded to initial concerns that charter schools might become havens for white students by requiring that all charter schools be racially integrated.

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[13] To be valid, such a conclusion assumes that, in the absence of charter schools, the students who would have attended them would have been distributed among public schools by racial composition in the same proportions as were actual public school students in 2000/01.

III. Examining Enrollment Patterns within Schools: Data and Methodology

Examining racial patterns across classrooms within schools is complicated by the fact that students at all grade levels ordinarily have instruction in more than one class over the course of a day or week, ranging from pull-out reading instruction and music in elementary schools to the dozens of classrooms among which high school students scurry each hour when the bell rings. Since we were most interested in interracial contact during academic instruction time, we chose to focus on the classes that most nearly approximated the basic academic instruction at each grade level.

To examine these classroom assignments, we were fortunate to have access to detailed unpublished administrative data from the North Carolina Department of Public Instruction, made available to us under strict conditions to insure confidentiality of information on individual students and teachers. For each school in the state, the department collected information on the racial composition of each "activity" throughout the school week, with figures broken down further by grade level. To measure interracial contact at different grade levels, we made calculations at the 1st, 4th, 7th, and 10th grades. Our strategy was to place every student in each of our four grade levels in exactly one classroom – designed to be the primary instructional class in grades 1 and 4, and the student's English class in grades 7 and 10.

In elementary schools, activities included subjects taught by a special teacher or instruction outside of the regular classroom, such as physical education or music, as well as academic subjects taught by a regular teacher, such as math or language arts. Reflecting the practice of assigning a single teacher to lead instruction in most academic

subjects for the same group of children, the most common activity definition in elementary grades was "self-contained." For the 1st and 4th grades in most schools, therefore, we could use this "self-contained" activity to indicate classroom assignment. In implementing this approach, however, we found that the set of activities offered in schools was not uniform across the state, reflecting either inconsistency in applying activity definitions or actual variation in the way districts organized instruction in their schools. For example, while the data indicated that most elementary schools offered self-contained classes, the category was missing altogether for some schools.

To account for differences across schools, we allowed the particular combination of activities used to differ across schools, and chose that combination whose total enrollment in the grade of interest came closest to the actual number of students enrolled in that grade in the school.[14] For 1st graders, self-contained was the activity that yielded the best fit to total 1st grade enrollment in 83% of the state's schools. In the remaining schools, another subject, such as general music, visual arts, or physical education provided the best fit. In using these other subjects, we are assuming that students who are grouped together for, say, general music, are also grouped together for the bulk of their academic subjects. For 4th graders, the self-contained designation yielded the best fit for 73% of the elementary schools, with general music, reading, math, and language arts combining to give the best fit in another 13% of schools.

In middle schools and high schools, the activities designated on the school reports generally corresponded to classes. For a particular high school, for example, information

[14] Enrollment based on activity reports might not exactly match enrollment figures from so-called membership reports because these surveys were undertaken on different dates in the fall.

was available on the number of students, by race, in each section of Algebra I taught in the school, and within each of those sections the racial breakdown of tenth grade students and, if students from other grades were enrolled in the class, the racial breakdown of the students from each of those grade levels as well. Similar information was provided for all courses. We focused on classes in English, or language arts. Some high schools offered only four levels of English (denoted by levels I-IV), while others offered those four plus English as a second language, occupational English, or courses combining language arts with other subjects. However, since every student in theory was required to take one of them every year, we counted 7^{th} or 10^{th} grade students in whatever English course they were enrolled. Among schools containing a 7th grade, the best fit was attained in 42% of schools by counting all English courses, including reading courses and courses combining language arts with other subjects; but in another 27% of schools the best fit meant excluding reading and combined courses. For high schools, the best grouping at the 10th grade level was to combine all English-related courses, a combination that worked best in 83% of schools.

Once each student in each of the four grade levels was assigned to a classroom, exposure rates could be calculated by following the logic of the conventional measure described above. Instead of measuring the nonwhite percentage in the typical white student's school, our more exact measure of exposure gives the nonwhite percentage in the typical white student's *classroom*. We performed these calculations for classes that contained any students in grades 1, 4, 7, or 10. Unless the classrooms in each school are racially balanced at that school's racial composition, this exposure rate will be lower than the school-level exposure rate, and this difference can be attributed entirely to

segregation within the school. By virtue of the additional level of detail provided by classroom-level data, therefore, segregation in a district can be decomposed into two components: (1) the portion due to racial disparities at the classroom level, within schools and (2) the portion due to racial disparities between schools, within a district. This second portion is equivalent to S_k^B, the segregation index based on school-level data. Since this conventional segregation index is based on school-level data, it systematically understates actual segregation. Just how serious this understatement is will depend on the relative magnitude of the within-school component.[15] In summary, we decompose a district's segregation into two pieces: that which is attributable to between-school segregation in the district and that which is attributable to within-school segregation in the district. As defined up to this point, these measures have been based on disparities in enrollment patterns defined in terms of white and nonwhite students, but they can easily be modified to assess segregation between any two racial groups.

IV. Segregation Using Classroom-Level Data

Table 3 presents segregation indices using classroom-level data calculated for districts in the state for both school years, at each of four grade levels. The first panel employs the basic white/nonwhite division used throughout the paper. By comparing this first section to Table 2, it becomes immediately evident that these indices are larger than those based on school-level data, suggesting that segregation within schools does exist and that segregation measures based on school-level data consequently understate total

[15] By similar logic, it is possible to decompose segregation within a county into a third part, that due to disparities between districts in a way parallel to the approach we use for metropolitan areas, as detailed in Appendix C. Because the vast majority of counties had only one district, we do not use this decomposition.

segregation. Interestingly, the relative ranking of these indices across districts is quite similar to that based on the school-level data in Table 2. To illustrate this similarity for 2000/01: the most segregated of the largest districts (Guilford) also had the highest segregation index for three of the four grade levels shown; the three urban district groups have the same rank in grades 1, 4, and 7 in Table 3 as they do for the school-level indices in Table 2; and, among rural districts, those in the Piedmont were most segregated in Table 2 and in each grade level in Table 3. A second notable aspect of these indices is the differences that are evident among grade levels. Measured segregation was somewhat higher in grades 7 and 10 than for the two elementary grades; for 2000/01 the average index was 0.23 for the higher two grades and 0.20 for the lower two.

As in the previous table based on conventional measures, Table 3 indicates that rates of segregation calculated from classroom-level data generally increased over the six-year period. The average index for the state rose from 0.15 to 0.20 in the 1st grade, from 0.14 to 0.20 in the 4th grade, from 0.18 to 0.23 in the 7th, and from 0.20 to 0.23 in the 10th. It is striking that segregation increased at every grade level and in every district and district group shown.

Given the history of slavery and Jim Crow segregation in the South and the history of discrimination against blacks in the United States, it is pertinent to ask whether patterns of segregation concerning black students is in any way distinctive from that of other minorities. And, given the growing importance of Latinos in the country, as well as their recent growth in North Carolina,[16] examining segregation as it applies to Hispanic students is also important. Thus the remaining three sections of Table 3 present

[16] According to census data, the state's Hispanic population quintupled during the 1990s, by 2000 comprising almost 5% of total population.

comparable average segregation indices for the state based on black/white, Hispanic/white, and black/Hispanic groupings of students. Significantly, for all but the 10th grade, whites tended to be more segregated from blacks than from nonwhites in general, a generalization that applies to almost every district or regional group. For Hispanic/white segregation, the differences are less consistent. Compared to blacks, Hispanic students were generally less segregated from whites at the 1st and 4th grades in both years. But in the 7th and 10th grades Hispanic/white segregation intensified markedly over the period, becoming by 2000/01 more pronounced than black/white segregation. The increase in the average white-Hispanic index over this period was more than twice that of any other racial pair.[17] The last line of the table shows that Hispanic and black students also tended to be segregated from each other as much or more than whites were from Hispanics.

To assess the importance of segregation within schools, Table 4 presents weighted averages for the state of North Carolina showing the two components of segregation. The calculations show, first of all, that the contribution of within-school segregation differs markedly by grade level. Classroom-level segregation was practically nonexistent in grades 1 and 4 in North Carolina in 2000/01, indicated by indices of 0.04.[18] In grades 7 and 10, however, racial disparities between classrooms in the same

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[17] Percentage increases in the simple average of segregation indices were: white-nonwhite, 28%; black-white, 33; Hispanic-white, 79; and Hispanic-black, 30.

[18] A simulated random assignment of students to schools and classrooms within districts yielded school racial compositions that were generally very close to racial balance, but yielded distributions that deviated noticeably from racial balance within some schools. For the state as a whole, our simulation suggests that random distribution of students in 2000/01 would have produced within-school segregation indices of 0.04 in grades 1 and 4, 0.05 in grade 7, and 0.06 in grade 10. By contrast, random assignment would have produced between-school indices of 0.01 in grades 1 and 4 and 0.00 in grades 7 and 10. If

school were a more important source of segregation than differences between schools. Whereas within-school segregation accounted for only about a fifth of total segregation in grade 1, it was well over half of the total in grade 10. This pattern probably reflects high schools' larger size and greater differentiation among classes, as compared to elementary schools. It also reflects the likelihood that, owing to their smaller size, elementary schools are more likely than high schools to reflect segregated residential patterns, in the absence of busing.

The remainder of Table 4 presents the same decomposition of segregation at the four grade levels for the five largest districts and the additional six district groups. Regarding patterns in 2000/01, between-school segregation was generally higher in the elementary schools than in the high schools. This makes sense, given the likelihood that elementary schools are located in relatively segregated neighborhoods and in light of the wider geographic coverage of high schools. The reverse relationship tended to characterize within-school segregation, with high schools showing the highest rates. In fact, at the two elementary grades throughout the state within-school segregation was virtually nonexistent. In terms of variation across the state, between-school segregation was especially low in the rural districts in the Coastal and Mountain regions, which corresponds to the school measures shown in Table 2. By contrast, between-school segregation was comparatively high in Guilford, Forsyth, and, to a lesser extent, in Mecklenburg. As for within-school segregation, it appeared to be a significant factor only in grades 7 and 10, and then only in some districts. In 2000/01, it reached its highest

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random assignment rather than racial balance were adopted as the benchmark for measuring segregation, therefore, the within-school portion would be smaller than what is implied in the present paper.

values in Wake's 7th grades and in the urban Piedmont's 10th grades. Remarkable for its low measured within-school segregation is Cumberland County, with consistent indices of 0.07 in both 7th and 10th grades.

Table 4 also reveals that segregation increased over the six-year period 1994/95 to 2000/01. For the state, total segregation increased by 0.06 in grade 4, 0.05 in grades 1 and 7, and 0.03 in grade 10. For the state, between-school segregation increased most in the elementary grades, with especially large increases in Winston-Salem/Forsyth, Charlotte-Mecklenburg, and Guilford, and in other urban districts in the Coastal region. In grades 7 and 10 most of the increase was in within-school segregation, with the only large increases in between-school segregation being recorded in Winston-Salem/Forsyth.

V. The Correlates of School Segregation

Why does segregation within and between public schools persist? Why has racial separation increased in recent years? Although a detailed analysis of these questions is beyond the intended scope of the present paper, it is illuminating at least to examine how segregation correlates with several readily measured characteristics of districts and local areas. These correlations may point to promising directions for further study of school segregation.

Since the demise of dual systems in the South after 1968, public school segregation has been most frequently associated with larger, urban districts in both the South and the North. It is natural to wonder, therefore, whether segregation is equally pervasive in districts of varying size. Segregation might correlate positively with district size for several reasons. Larger districts might simply support a larger number of schools

and classrooms, automatically increasing the potential for segregation. Larger communities tend to be more residentially segregated (Cutler, Glaeser and Vigdor 1999), and this segregation may carry over into classrooms. The greater logistical challenges of transporting students for racial balance might also make larger districts more segregated than smaller ones. In the first panel of Figure 3, we plot the weighted average of the four grades' segregation indices against the logarithm of enrollment in each district. The plot is consistent with this intuition; segregation does rise, non-linearly, with district enrollment. The slope of the depicted regression line is significantly greater than zero; 37% of the variation in segregation is associated with variation in the size of school districts.

Residential segregation has been shown to increase as the size of the minority population increases (Cutler, Glaeser and Vigdor 1999). Panel B of Figure 3 explores the relationship between segregation and racial composition across school districts. A quadratic, inverted U-shape appears to fit the data, albeit imperfectly, implying that segregation rises with percentage nonwhite, up to a point, and then declines. We examine this relationship further in Figure 4, which arrays districts by their nonwhite percentage in 2000/01. The figure shows the resulting relationships for the four grades, with each bar showing between- and within-school segregation. For the 7th and 10th grades, total segregation was indeed higher in districts with greater proportions of nonwhites, up to proportions between 50 and 60% nonwhite, with about half or more of that segregation being attributable to disparities within schools. The patterns are similar but rougher for the two elementary grades, with most of that segregation attributable to disparities between schools. For all four grades, segregation is highest in racially divided

school districts, and lowest in districts with a dominant majority of either whites or nonwhites.

Changes in segregation over time also prove to be related to district racial composition. In Figure 5, we array changes in between- and within-school segregation at the district level. Bars that extend on both sides of the 0.00 line indicate that the two components changed in oppositive directions, with the net change being the difference between the two. Except for the 10th grade, the districts experiencing the largest increases in segregation tended to be racially divided, with compositions between 20 and 70% nonwhite. Districts at either extreme did not experience large increases in segregation, and in some of them segregation decreased.

In any district with neighborhood-based school assignments, school segregation should be an increasing function of residential segregation. To examine the relationship between segregation in neighborhoods and schools, we used block-level data from the 2000 Census to calculate an alternative version of the segregation index defined in equation (2) above.[19] This residential segregation index measures the degree to which the racial composition of each block in a county diverges from racial balance. In Panel C of Figure 3, we plot this residential segregation measure against the racial segregation across classrooms for all districts in the county. Aside from the positive relationship between the two measures, this figure shows two important patterns. First, the relationship between neighborhood and school segregation is surprisingly weak. Only a fifth of the variance in school segregation is associated with residential segregation, and

[19] Our residential segregation index uses block level data, rather than more commonly used tract data, because two North Carolina counties are so sparsely populated that they only constitute one tract. The median North Carolinian lives on a block with 111 other persons.

many counties with similar levels of segregation across neighborhoods have extremely different levels of segregation between and within schools. Second, all but one point in the graph lies below the 45-degree line, indicating that the average exposure of whites to nonwhites at school exceeds the exposure at and around their own homes. Although North Carolina public schools are segregated, in the sense that schools and classrooms are not racially balanced, they nevertheless offer a more integrated experience than do the state's neighborhoods.[20]

VI. Segregation Within Schools: School-Level Analysis

What we have referred to in this paper as within-school segregation is the portion of a district's segregation that is attributable to racial disparities within schools. This measure is, however, not designed to answer the question, "how segregated are the classrooms in school j?" To address this school-level question, it is necessary to define an index of segregation that can be applied to each school, which can easily be done in a manner analogous to the district measures defined above. Like the within-school portion of district segregation used above, this new measure is based upon the gap between overall racial composition and the actual exposure rate, but the percentage gap is based on the racial composition of the school rather than the district. We define this alternative measure of within-school segregation so that we can compare calculations based on our

[20] Since calculated segregation indices are affected by the number of individuals in the typical unit of observation, residential and school segregation indices are comparable only if the number of children in a typical block is close to the number of students in a typical classroom. This is the case. Since the median North Carolinian lived in a block with 112 residents in 2000 (2000 U.S. census data), and school-age children are about a fifth of total population, the typical block has about 22 children, roughly the average class size.

North Carolina data to the only previous study using a similar approach of which we are aware. Morgan and McPartland (1981) employed a large national survey of enrollment patterns undertaken in the fall of 1976 in which each surveyed school provided information on the student enrollment in 18 representative classrooms. To make our calculations comparable to theirs, we follow their lead and focus on whites and blacks rather than whites and nonwhites.[21] As shown in Figure 6, both studies imply that segregation within schools tended to be highest in schools with larger percentages of black students, but only up to a point. In schools with few whites, segregation was lower, though not as low as in virtually all-white schools. Both studies also indicate that within-school segregation tends to be highest in middle schools and high schools. Comparing the degree of segregation within schools, the figure suggests that North Carolina districts in 2000/01 were more segregated than the national average in 1976/77 in middle schools and high schools, but that segregation in elementary schools was low in both samples.

VII. Segregation in Metropolitan Areas

For the bulk of the present paper, we employ a measure of school segregation that takes as its implicit benchmark the racial composition of an entire school district. That is, deviations in racial composition in each classroom and school are measured in relation to the district's overall racial mix. In the previous section, the benchmark was the racial mix of the individual school. Since a majority of students in the U.S. live in metropolitan areas, a third natural perspective asks, how great are racial disparities in an entire

[21] Our calculations for this comparison ignore students from other racial groups. In their study, Morgan and McPartland actually calculated the index two ways and averaged them. One of the ways was identical to ours. In the other they included other racial groups in calculating racial composition, which would produce slightly different values.

metropolitan area? In a study of metropolitan areas in the U.S., Clotfelter (1999) found that the bulk of the segregation in 1993/94 (measured at the school level) was attributable to racial disparities between districts, not racial disparities with districts, and that segregation was most pronounced in the largest metropolitan areas in the Midwest, areas marked by high rates of residential segregation. Because it utilizes school-level data, this previous work on metropolitan segregation cannot, however, examine the relative importance of within-school segregation.

To take this step, we incorporated our classroom-level data into a metropolitan-level analysis to examine the 11 metropolitan areas in North Carolina defined as of 1999. In contrast to most metropolitan areas in the country, fully four of the metro areas in North Carolina were served by a single school district, meaning that, by definition, there can be no segregation arising from racial disparities between districts. Table 5 presents the components of school segregation for the four grades in the 11 metro areas. Not surprisingly, these indices tend to be larger than those for individual districts, because the disparities that exist between districts add to measured segregation. On average, inter-district disparities added from 0.06 to 0.08 to segregation in these metro areas. Perhaps surprisingly, the area in which disparities among districts contributed the most to metropolitan segregation was Asheville; although it contained only three school districts, they differed widely in racial composition. Next in terms of inter-district disparities was Greensboro-Winston-Salem-High Point (hereafter, Greensboro), which contained 11 districts. The table indicates that size and number of districts are generally correlated with segregation, but the relationship is by no means tight. The state's most segregated areas in 2000/01 were Greensboro, Goldsboro, and Charlotte-Gastonia.

As for trends in segregation, most of the metropolitan areas showed increases over the six-year period, with Greensboro, Greenville, Wilmington, and Charlotte showing especially large increases. These increases in school segregation are all the more striking in that they occurred during a period of *decreasing* residential segregation. Measured by Glaeser and Vigdor's (2002) index of isolation, residential segregation declined between 1990 and 2000 in all but one of North Carolina's metropolitan areas. Furthermore, two of the three areas where this index of residential segregation declined the most (Wilmington and Greensboro) were the two where our index of school segregation *increased* the most.[22] Evidently, the increases we observe in school segregation do not appear to be explained by rising residential segregation.

VIII. Conclusion

This paper analyzes racial segregation in the public schools of North Carolina. It does so employing data on racial composition at the classroom level. Consistent with other studies of segregation in the schools, we find that the public schools of this state, like others of the region, evince little of the extreme segregation that marked the period before the 1960s, although segregation in a few large urban districts was unusually high. Measured on a metropolitan basis, school segregation was higher, but still did not reach the levels of the country's most segregated areas.

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[22] The Cutler-Glaeser-Vigdor index of residential isolation declined -0.160 in Wilmington and -0.103 in Greensboro over the decade (Glaeser and Vigdor 2002, Table 3). See also Cutler, Glaeser and Vigdor (1999). The average of the segregation indices for the four grades increased in those areas by 0.08 and 0.09, respectively. Greenville, where average segregation increased by 0.0825, had a decline of -0.063 in the index of isolation.

The paper contributes to the literature on school segregation by measuring the extent of segregation within schools throughout a large and heterogeneous state. We develop a method for distinguishing such within-school segregation from the between-school segregation that has been the subject of most studies of school segregation. Our analysis suggests that within-school segregation is much less important in elementary grades than in middle school and high school. Within-school segregation accounts for roughly a fifth of the total segregation in grades 1 and 4,while it is about half the total in grade 7 and more than half in grade 10. We find that between-school segregation in districts tends to be higher in districts with larger proportions of nonwhites, peaking in districts between 50 and 70% nonwhite.

Apart from the between/within distinction, perhaps the most arresting finding in the study is the marked increase in measured segregation over the six-year period form 1994/95 to 2000/01, an increase we observed at all levels and for a variety of measures. Whether this change is part of a permanent reversal of 40-year-old trends or merely a temporary blip is unclear at this time, but it is a trend worth continued scrutiny.

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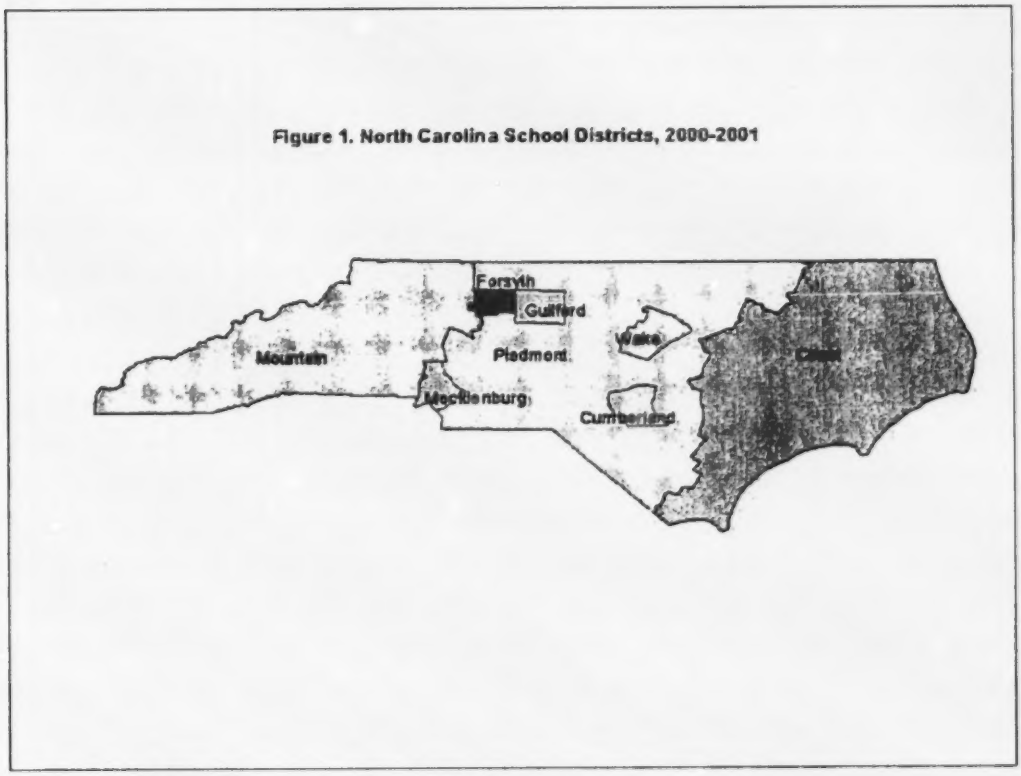

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Figure 2. Percent Nonwhite in North Carolina School Districts, 1999/00

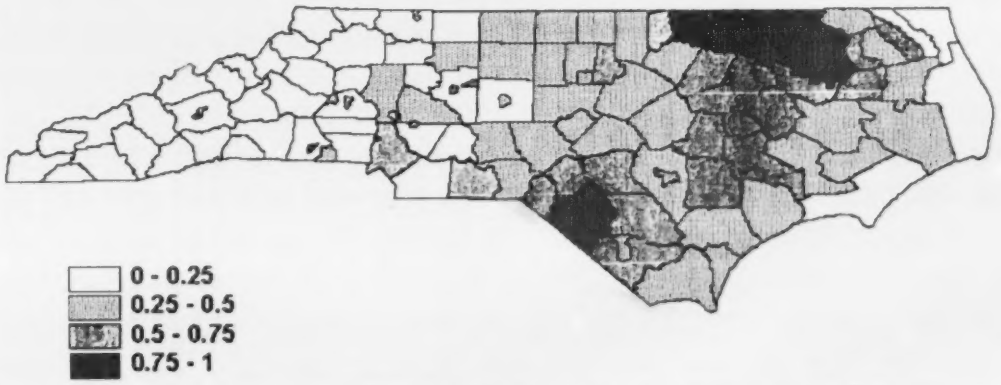

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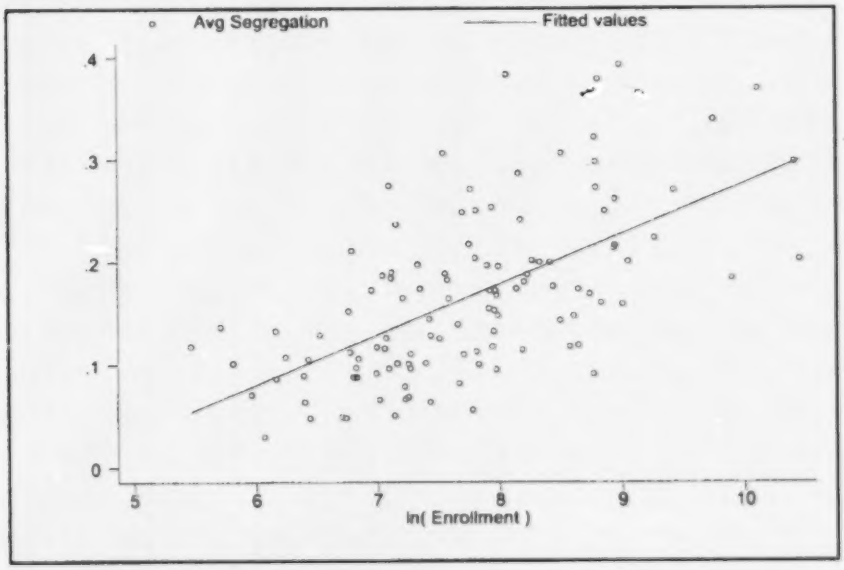
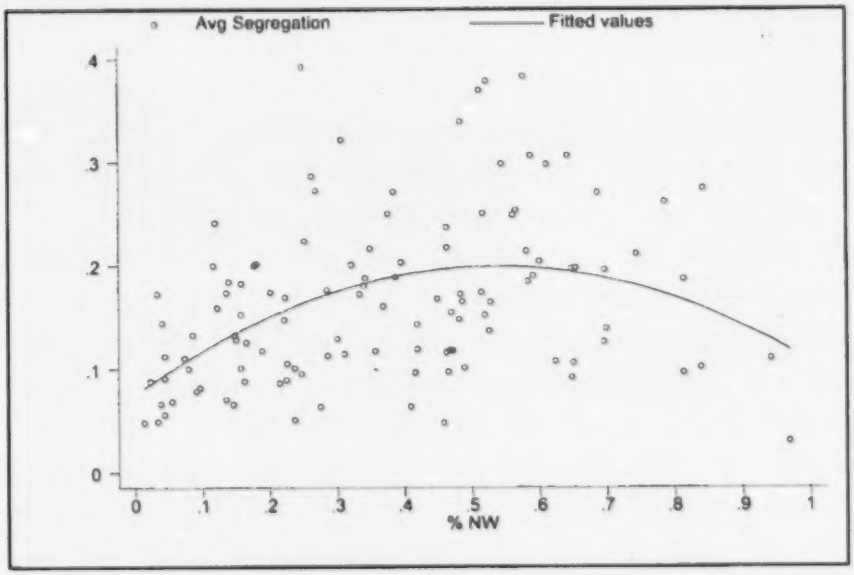
Figure 3. Plots of Average School Segregation for Grades 1, 4, 7, and 10 Against District Enrollment, District Racial Composition, and County Residential Segregation

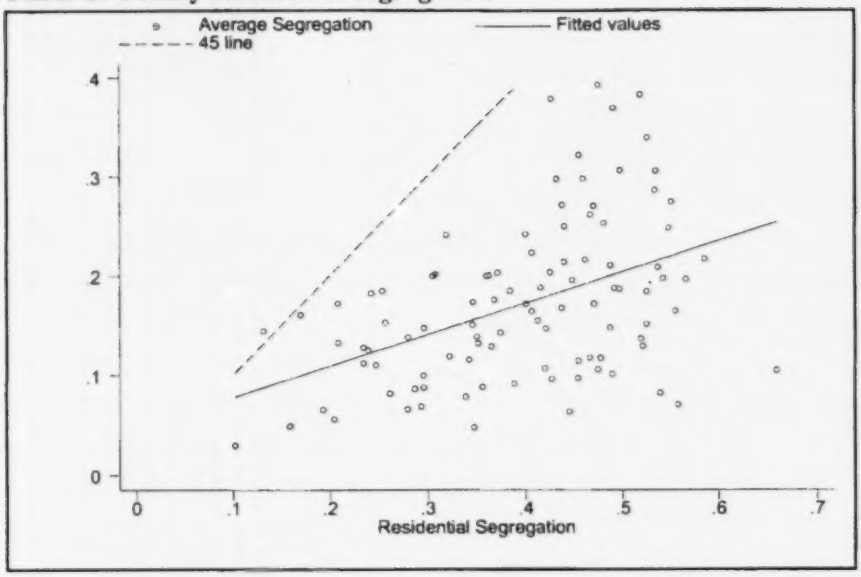
Panel A. District Enrollment (logarithm)



Panel B. Percentage Nonwhite



Panel C. County Residential Segregation



Note: Where S is average segregation (S_k), estimated equations are:
A. $S = 0.03 + 0.05\ (0.007)\ \ln(\text{enrollment})$, $R^2 = 0.37$
B. $S = 0.07 + 0.46\ \%NW - 0.43\ \%NW^2$, $R^2 = 0.2$
C. $S = 0.04 + 0.32\ (0.063)\ RS$, $R^2 = 0.25$
Observations are districts in panels A and B and counties in panel C.
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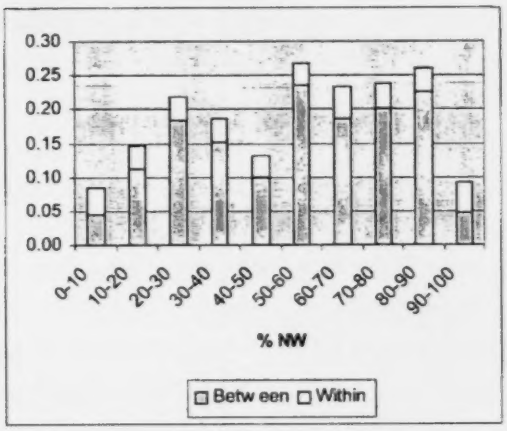
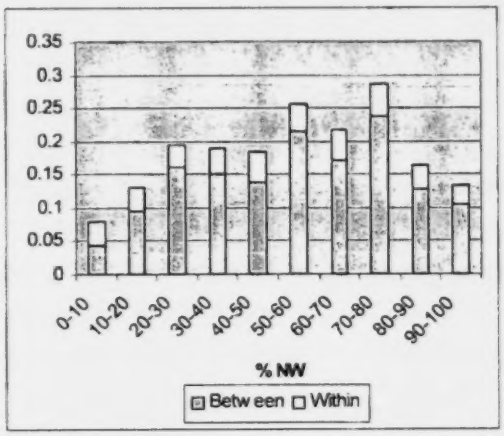
Figure 4. Between and Within-School Segregation by Percentage Nonwhite Intervals, 2000/01

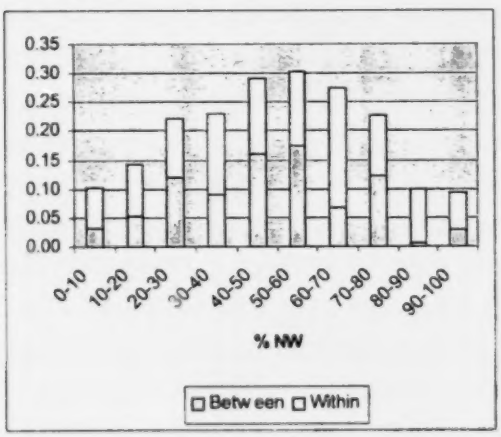
1st Grade



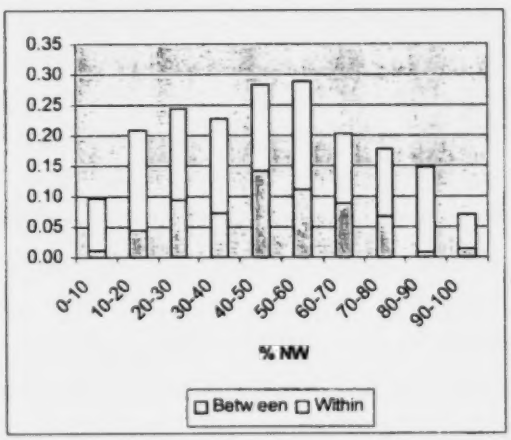
4th Grade



7th Grade



10th Grade



Source: Authors' calculations. Decile averages are based on weighted average of segregation in districts.
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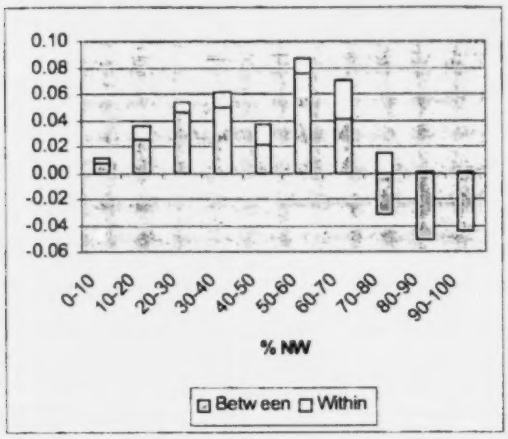
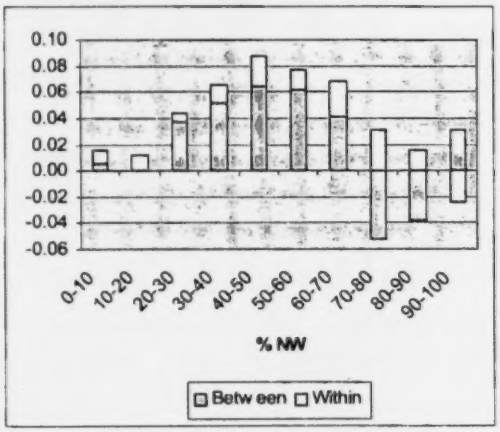
Figure 5. Change in Between and Within-School Segregation by Percentage Nonwhite Intervals, 2000/01 - 1994/95 Difference

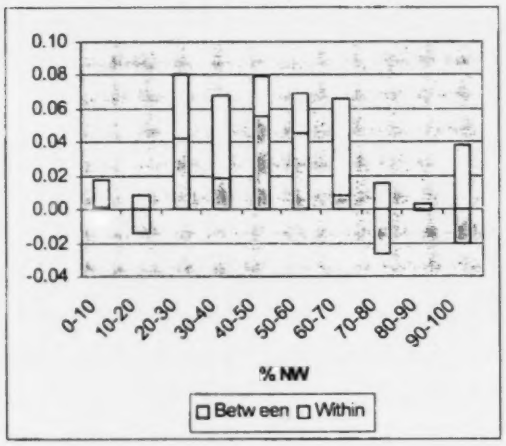
1st Grade



4th Grade



7th Grade



10th Grade

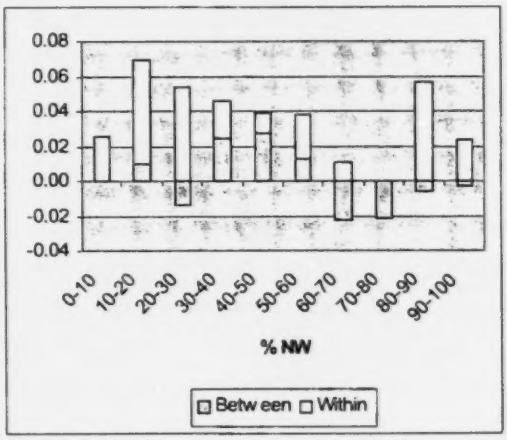


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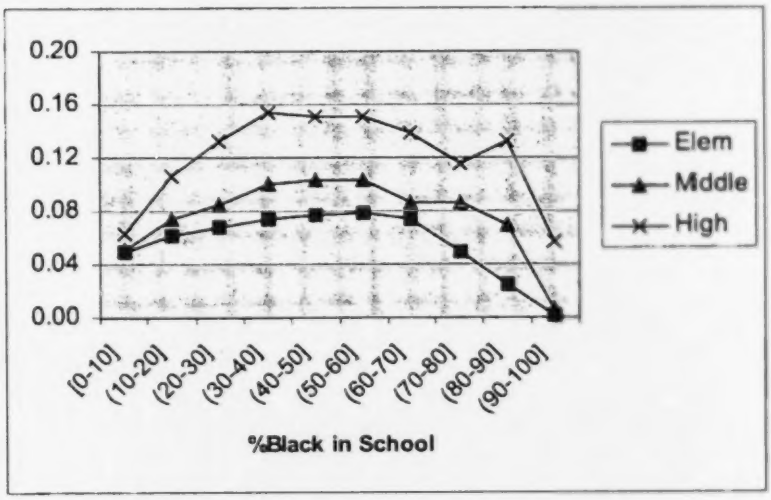
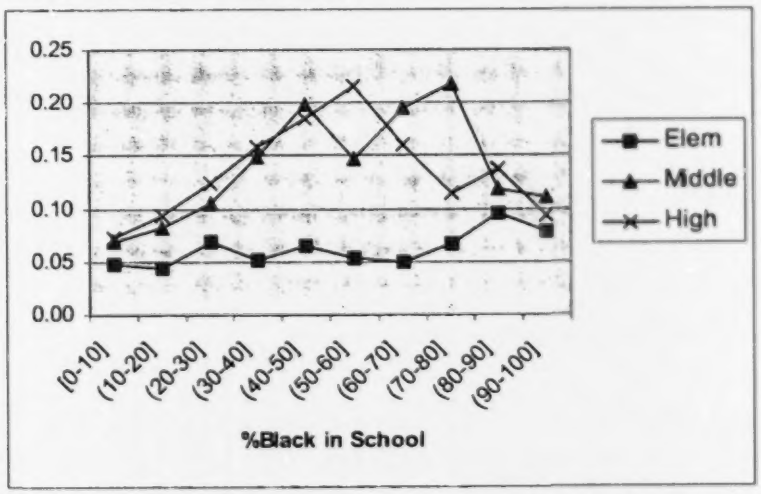
Figure 6. Classroom Segregation by Percentage Black in School, Comparison of Two Surveys
1976/77: Morgan and McPartland, U.S.



2000/01: Present Study, North Carolina



Source: Top: Morgan and McPartland (1981, Table 4); bottom: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; School Activity Report Data, 1994/95 and 2000/01; authors' calculations.
Note: Measure of school-level segregation is S_j^{W*} . See appendix. (10-20] denotes greater than 10% and less than or equal to 20%. Radfig6(II) - 05/29/02

TABLES

Table 1. Enrollment and Racial Composition in North Carolina Public Schools, 2000/01, State and District Groups

	Enrollment	Percentage of Students				Growth Rate,
	Total[a]	Black	Hispanic	Other nonwhite	All nonwhite	1994/95-2000/01
State of NC	1,281,201	31.1	4.4	3.3	38.9	1.9
Five largest districts						
Charlotte-Mecklenburg	104,260	43.1	5.5	4.9	53.4	3.4
Wake	98,975	27.7	4.6	4.2	36.4	4.2
Guilford	63,585	41.9	3.3	4.4	49.6	2.3
Cumberland	50,927	48.4	5.3	3.3	57.1	0.4
Winston-Salem/Forsyth	45,914	39.0	6.5	1.3	46.8	2.6
Other Urban						
Coastal	133,246	42.4	3.3	1.3	47.0	0.5
Piedmont	128,288	37.6	6.1	2.5	46.2	2.2
Mountain	96,980	17.5	3.2	2.9	23.7	1.1
Rural						
Coastal	79,269	37.5	3.6	0.6	41.6	0.5
Piedmont	299,922	30.3	4.6	5.4	40.2	1.9
Mountain	179,835	8.5	3.6	2.2	14.3	1.7

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; Membership Data, 1994/95 and 2000/01 and North Carolina Public Schools Statistical Profile 2001; authors' calculations.

(a) Total figure includes charter schools.

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Table 2. Segregation in School Districts in North Carolina, 1994/95 and 2000/01, Using Two Measures Based on School-Level Data

	Gap-Based Segregation Index S_k^B		Percentage of nonwhite students in schools 90-100% nonwhite	
	1994/95	2000/01	1994/95	2000/01
State of NC	0.10	0.13	4.4	6.7
Five largest districts				
Charlotte-Mecklenburg	0.12	0.20	2.2	6.9
Wake	0.06	0.09	0.0	0.9
Guilford	0.24	0.29	11.8	18.0
Cumberland	0.11	0.13	3.5	2.8
Winston-Salem/Forsyth	0.07	0.25	0.0	20.0
Other Urban				
Coastal	0.11	0.14	3.0	11.8
Piedmont	0.11	0.11	11.5	7.8
Mountain	0.07	0.08	0.0	0.3
Rural				
Coastal	0.06	0.07	1.3	2.1
Piedmont	0.11	0.12	8.2	9.0
Mountain	0.06	0.08	0.0	0.2

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; Membership Data, 1994/95 and 2000/01 and North Carolina Public Schools Statistical Profile 2001; authors' calculations.

Note: Charter schools included.

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Table 3. Segregation in Grades 1, 4, 7, and 10 in North Carolina Districts, 1994/95 and 2000/01, Using Classroom-Level Data, Four Alternative Racial Divisions

1) Nonwhite and White (Basic Measure)

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
State of NC	0.15	0.20	0.14	0.20	0.18	0.23	0.20	0.23
Five Largest Districts								
Charlotte-Mecklenburg	0.19	0.28	0.18	0.27	0.28	0.34	0.26	0.31
Wake	0.09	0.14	0.08	0.15	0.20	0.27	0.21	0.24
Guilford	0.27	0.37	0.28	0.36	0.37	0.38	0.39	0.37
Cumberland	0.15	0.18	0.14	0.20	0.18	0.20	0.14	0.17
Winston-Salem/Forsyth	0.12	0.36	0.13	0.38	0.16	0.38	0.19	0.26
Other Urban								
Coastal	0.17	0.22	0.13	0.23	0.18	0.27	0.22	0.24
Piedmont	0.16	0.18	0.17	0.19	0.17	0.23	0.23	0.25
Mountain	0.12	0.17	0.13	0.14	0.10	0.15	0.14	0.18
Rural								
Coastal	0.10	0.15	0.10	0.14	0.14	0.19	0.15	0.16
Piedmont	0.16	0.20	0.16	0.19	0.18	0.21	0.18	0.21
Mountain	0.12	0.15	0.11	0.12	0.14	0.15	0.15	0.21

2) Black and White Only

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
State of NC	0.16	0.23	0.15	0.22	0.18	0.24	0.20	0.23
Five Largest Districts								
Charlotte-Mecklenburg	0.20	0.28	0.18	0.28	0.28	0.37	0.28	0.33
Wake	0.10	0.18	0.09	0.20	0.22	0.33	0.22	0.28
Guilford	0.27	0.41	0.29	0.40	0.37	0.41	0.41	0.40
Cumberland	0.16	0.22	0.15	0.23	0.20	0.23	0.16	0.19
Winston-Salem/Forsyth	0.12	0.42	0.13	0.44	0.16	0.42	0.20	0.27
Other Urban								
Coastal	0.18	0.26	0.14	0.26	0.18	0.29	0.23	0.26
Piedmont	0.18	0.21	0.18	0.21	0.18	0.24	0.23	0.23
Mountain	0.13	0.19	0.12	0.17	0.10	0.15	0.15	0.15
Rural								
Coastal	0.11	0.16	0.10	0.15	0.14	0.19	0.15	0.15
Piedmont	0.16	0.21	0.16	0.20	0.17	0.21	0.18	0.20
Mountain	0.12	0.17	0.12	0.13	0.13	0.14	0.12	0.14

3) Hispanic and White Only

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
State of NC	0.11	0.20	0.09	0.16	0.16	0.25	0.17	0.34
Five Largest Districts								
Charlotte-Mecklenburg	0.18	0.46	0.16	0.34	0.29	0.44	0.15	0.34
Wake	0.10	0.16	0.07	0.13	0.09	0.26	0.25	0.31
Guilford	0.16	0.38	0.13	0.31	0.25	0.40	0.18	0.42
Cumberland	0.11	0.14	0.13	0.17	0.16	0.19	0.15	0.20
Winston-Salem/Forsyth	0.18	0.38	0.13	0.29	0.39	0.41	0.11	0.37
Other Urban								
Coastal	0.09	0.18	0.09	0.15	0.10	0.23	0.16	0.27
Piedmont	0.13	0.18	0.12	0.19	0.22	0.31	0.19	0.50
Mountain	0.08	0.14	0.07	0.09	0.07	0.18	0.10	0.31
Rural								
Coastal	0.11	0.17	0.08	0.13	0.12	0.20	0.11	0.31
Piedmont	0.11	0.21	0.10	0.17	0.16	0.27	0.17	0.34
Mountain	0.07	0.11	0.06	0.09	0.12	0.17	0.20	0.33

4) Black and Hispanic Only

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
State of NC	0.18	0.23	0.17	0.20	0.25	0.30	0.22	0.34
Five Largest Districts								
Charlotte-Mecklenburg	0.15	0.32	0.19	0.16	0.32	0.34	0.17	0.29
Wake	0.21	0.24	0.16	0.21	0.22	0.29	0.33	0.37
Guilford	0.20	0.25	0.17	0.17	0.30	0.30	0.24	0.40
Cumberland	0.12	0.11	0.09	0.13	0.12	0.15	0.12	0.13
Winston-Salem/Forsyth	0.18	0.24	0.15	0.20	0.47	0.32	0.17	0.33
Other Urban								
Coastal	0.15	0.22	0.14	0.20	0.15	0.31	0.21	0.27
Piedmont	0.19	0.16	0.16	0.19	0.29	0.28	0.21	0.51
Mountain	0.23	0.27	0.19	0.27	0.29	0.30	0.27	0.50
Rural								
Coastal	0.13	0.23	0.10	0.17	0.14	0.21	0.18	0.26
Piedmont	0.20	0.23	0.18	0.19	0.22	0.32	0.22	0.32
Mountain	0.38	0.40	0.46	0.43	0.51	0.46	0.48	0.58

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; School Activity Report Data, 1994/95 and 2000/01; authors' calculations.

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Table 4. Segregation Between and Within Schools in North Carolina Districts, Grades 1, 4, 7, and 10, 1994/95 and 2000/01

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
State								
Total	0.15	0.20	0.14	0.20	0.18	0.23	0.20	0.23
Between schools	0.13	0.17	0.12	0.16	0.09	0.11	0.08	0.09
Within schools	0.02	0.04	0.02	0.04	0.09	0.12	0.12	0.15
Five Largest Districts								
Charlotte-Mecklenburg								
Total	0.19	0.28	0.18	0.27	0.28	0.34	0.26	0.31
Between schools	0.17	0.25	0.14	0.24	0.12	0.19	0.10	0.13
Within schools	0.03	0.03	0.03	0.03	0.16	0.15	0.16	0.17
Wake								
Total	0.09	0.14	0.08	0.15	0.20	0.27	0.21	0.24
Between schools	0.08	0.11	0.06	0.10	0.06	0.07	0.05	0.07
Within schools	0.02	0.03	0.02	0.05	0.14	0.20	0.16	0.17
Guilford								
Total	0.27	0.37	0.28	0.36	0.37	0.38	0.39	0.37
Between schools	0.25	0.34	0.26	0.32	0.23	0.26	0.28	0.26
Within schools	0.01	0.03	0.02	0.04	0.14	0.12	0.11	0.11
Cumberland								
Total	0.15	0.18	0.14	0.20	0.18	0.20	0.14	0.17
Between schools	0.13	0.14	0.12	0.16	0.11	0.13	0.08	0.10
Within schools	0.02	0.04	0.02	0.04	0.07	0.07	0.07	0.07
Winston/Salem-Forsyth								
Total	0.12	0.36	0.13	0.38	0.16	0.38	0.19	0.26
Between schools	0.11	0.34	0.10	0.32	0.02	0.24	0.04	0.11
Within schools	0.01	0.02	0.03	0.06	0.14	0.14	0.15	0.15
Other Urban								
Coastal								
Total	0.17	0.22	0.13	0.23	0.18	0.27	0.22	0.24
Between schools	0.15	0.18	0.11	0.18	0.10	0.14	0.08	0.10
Within schools	0.02	0.04	0.02	0.05	0.07	0.13	0.13	0.14
Piedmont								
Total	0.16	0.18	0.17	0.19	0.17	0.23	0.23	0.25
Between schools	0.14	0.15	0.14	0.15	0.08	0.07	0.09	0.06
Within schools	0.02	0.03	0.02	0.04	0.09	0.16	0.14	0.19
Mountain								
Total	0.12	0.17	0.13	0.14	0.10	0.15	0.14	0.18
Between schools	0.10	0.13	0.10	0.12	0.03	0.05	0.04	0.04
Within schools	0.02	0.04	0.03	0.03	0.07	0.10	0.10	0.14
Rural								
Coastal								
Total	0.10	0.15	0.10	0.14	0.14	0.19	0.15	0.16
Between schools	0.07	0.11	0.08	0.09	0.05	0.08	0.04	0.05
Within schools	0.03	0.05	0.02	0.05	0.09	0.11	0.11	0.12
Piedmont								
Total	0.16	0.20	0.16	0.19	0.18	0.21	0.18	0.21
Between schools	0.14	0.16	0.13	0.15	0.11	0.11	0.09	0.08
Within schools	0.02	0.04	0.03	0.04	0.07	0.10	0.10	0.13
Mountain								
Total	0.12	0.15	0.11	0.12	0.14	0.15	0.15	0.21
Between schools	0.09	0.11	0.09	0.09	0.06	0.06	0.04	0.05

Within schools	0.03	0.04	0.02	0.03	0.08	0.09	0.11	0.17

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; School Activity Report Data, 1994/95 and 2000/01; authors' calculations.

Note: Total segregation is Sk, between-school segregation is SkB and within-school segregation is Skw . See text.

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Table 5. Segregation in North Carolina Metropolitan Areas, 1994/95 and 2000/01

	Grade 1		Grade 4		Grade 7		Grade 10	
	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01	1994/95	2000/01
All Metropolitan Areas								
Total	0.22	0.29	0.21	0.29	0.26	0.33	0.29	0.31
Within Schools	0.02	0.03	0.02	0.04	0.10	0.12	0.12	0.14
Between Schools	0.13	0.18	0.12	0.17	0.09	0.13	0.10	0.10
Between Districts	0.07	0.08	0.07	0.08	0.07	0.08	0.07	0.06
Asheville (3)								
Total	0.26	0.25	0.22	0.27	0.27	0.19	0.34	0.27
Within Schools	0.02	0.04	0.02	0.03	0.10	0.08	0.14	0.14
Between Schools	0.04	0.07	0.04	0.09	0.02	0.04	0.01	0.02
Between Districts	0.20	0.14	0.16	0.15	0.15	0.08	0.19	0.11
Charlotte - Gastonia [a] (7)								
Total	0.25	0.33	0.25	0.33	0.30	0.39	0.30	0.35
Within Schools	0.02	0.03	0.02	0.03	0.11	0.12	0.12	0.14
Between Schools	0.16	0.22	0.14	0.20	0.12	0.17	0.12	0.13
Between Districts	0.07	0.09	0.08	0.10	0.08	0.10	0.07	0.08
Fayetteville (1)								
Total	0.15	0.18	0.14	0.20	0.18	0.20	0.14	0.17
Within Schools	0.02	0.04	0.02	0.04	0.07	0.07	0.07	0.07
Between Schools	0.13	0.14	0.12	0.16	0.11	0.13	0.08	0.10
Between Districts	0	0	0	0	0	0	0	0
Greensboro - Winston Salem - High Point (11)								
Total	0.29	0.41	0.28	0.41	0.33	0.42	0.37	0.39
Within Schools	0.01	0.02	0.02	0.04	0.11	0.11	0.11	0.13
Between Schools	0.14	0.23	0.14	0.22	0.11	0.17	0.14	0.15
Between Districts	0.13	0.16	0.11	0.15	0.11	0.14	0.13	0.11
Hickory - Morganton (6)								
Total	0.19	0.21	0.19	0.16	0.13	0.21	0.24	0.24
Within Schools	0.03	0.04	0.03	0.03	0.06	0.12	0.13	0.14
Between Schools	0.10	0.11	0.10	0.06	0.05	0.03	0.05	0.02
Between Districts	0.06	0.07	0.06	0.07	0.03	0.05	0.06	0.07
Jacksonville (1)								
Total	0.16	0.16	0.12	0.18	0.12	0.16	0.16	0.14
Within Schools	0.02	0.05	0.02	0.05	0.05	0.07	0.08	0.06
Between Schools	0.14	0.11	0.10	0.13	0.07	0.08	0.08	0.08
Between Districts	0	0	0	0	0	0	0	0
Wilmington (2)								
Total	0.09	0.15	0.09	0.17	0.08	0.18	0.15	0.23
Within Schools	0.01	0.04	0.02	0.06	0.06	0.12	0.10	0.13
Between Schools	0.07	0.11	0.07	0.11	0.01	0.06	0.05	0.10
Between Districts	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rocky Mount (2)								
Total	0.25	0.28	0.22	0.25	0.25	0.30	0.25	0.25
Within Schools	0.02	0.04	0.02	0.05	0.15	0.21	0.17	0.20
Between Schools	0.23	0.23	0.21	0.21	0.10	0.08	0.07	0.05
Between Districts	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Raleigh - Durham - Chapel Hill (7)								
Total	0.18	0.23	0.19	0.23	0.25	0.30	0.30	0.29
Within Schools	0.02	0.03	0.02	0.04	0.11	0.15	0.14	0.17
Between Schools	0.11	0.13	0.11	0.12	0.07	0.07	0.08	0.06
Between Districts	0.06	0.07	0.06	0.06	0.07	0.08	0.07	0.05
Goldsboro (1)								

Total	0.35	0.36	0.17	0.32	0.41	0.49	0.35	0.35
Within Schools	0.05	0.04	0.05	0.04	0.03	0.08	0.08	0.08
Between Schools	0.30	0.32	0.12	0.28	0.38	0.40	0.27	0.27
Between Districts	0	0	0	0	0	0	0	0
Greenville (1)								
Total	0.06	0.13	0.07	0.13	0.10	0.26	0.26	0.30
Within Schools	0.01	0.04	0.01	0.02	0.04	0.14	0.23	0.23
Between Schools	0.05	0.09	0.06	0.11	0.06	0.11	0.03	0.06
Between Districts	0	0	0	0	0	0	0	0

(a) Includes only the North Carolina counties in Charlotte- Gastonia-Rock Hill MSA.
Note: Number of districts in each metropolitan area given in parentheses.
Total segregation is S_m, within-school segregation is S_m^W, between-school segregation is S_m^B, and between-district segregation is S_m^D. See appendix.

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; School Activity Report Data, 1994/95 and 2000/01; authors' calculations.

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Appendix A: Selected Data for Districts

Table A1. Enrollment, Racial Composition, Growth Rate, and Segregation by district

County	School district	District group	Enrollment	Percentage of Students			Growth rate	2000/01 Segregation in schools				1994/95 Segregation in schools			
								4th Grade		10th Grade		4th Grade		10th Grade	
				Black	Hispanic	Other NW	95-01*	Within	Between	Within	Between	Within	Between	Within	Between
Alamance	Alamance-Burlington	UP	20,893	26.3	8.0	1.6	2.8	0.01	0.18	0.14	0.16	0.04	0.08	0.09	0.08
Alexander	Alexander	RM	5,432	6.1	3.[illegible]	3.7	1.6	0.03	0.09	0.15	0.00	0.01	0.20	0.11	0.00
Alleghany	Alleghany	RM	1,412	1.6	[illegible]3	0.0	-0.7	0.05	0.04	0.24	0.00	0.03	0.01	0.04	0.00
Anson	Anson	RP	4,482	63.5	0.6	1.7	0.3	0.07	0.16	0.10	0.02	0.07	0.12	0.20	0.00
Ashe	Ashe	RM	3,196	1.2	1.5	0.4	-1.4	0.03	0.01	0.46	0.00	0.02	0.01	0.03	0.00
Avery	Avery	RM	2,431	1.1	1.2	0.2	0.1	0.04	0.02	0.06	0.00	0.00	0.06	0.16	0.00
Beaufort	Beaufort	RC	7,396	42.4	3.1	0.2	-0.8	0.08	0.13	0.14	0.04	0.02	0.13	0.16	0.07
Bertie	Bertie	RC	3,637	82.8	0.5	0.4	-1.6	0.07	0.30	0.12	0.00	0.02	0.17	0.08	0.00
Bladen	Bladen	RP	5,695	50.5	3.2	1.1	0.7	0.07	0.18	0.19	0.05	0.02	0.12	0.08	0.12
Brunswick	Brunswick	RC	10,288	24.7	2.2	0.9	2.3	0.04	0.04	0.06	0.07	0.03	0.04	0.08	0.01
Buncombe	Buncombe	UM	25,058	7.5	2.7	1.1	0.8	0.03	0.13	0.14	0.04	0.03	0.08	0.06	0.03
Buncombe	Asheville City	UM	4,028	44.7	3.6	0.7	-2.4	0.05	0.03	0.20	0.00	0.03	0.00	0.25	0.00
Burke	Burke	RM	14,518	8.1	3.3	9.6	1.9	0.03	0.07	0.15	0.02	0.02	0.15	0.22	0.05
Cabarrus	Cabarrus	UP	19,088	14.4	4.6	1.4	4.0	0.05	0.10	0.18	0.03	0.01	0.06	0.11	0.03
Cabarrus	Kannapolis City	UP	4,265	30.6	8.5	1.5	1.1	0.03	0.04	0.16	0.00	0.02	0.01	0.08	0.00
Caldwell	Caldwell	RM	12,562	8.5	2.1	0.7	1.3	0.02	0.09	0.12	0.08	0.01	0.13	0.07	0.05
Camden	Camden	RC	1,277	19.5	0.3	0.9	0.9	0.01	0.00	0.10	0.00	0.04	0.00	0.05	0.00
Carteret	Carteret	RC	8,456	11.8	1.3	0.9	0.6	0.05	0.05	0.12	0.02	0.02	0.09	0.09	0.01
Caswell	Caswell	RP	3,571	44.0	1.3	0.1	0.7	0.03	0.03	0.12	0.01	0.01	0.12	0.07	0.00
Catawba	Catawba	UM	16,437	8.0	4.0	6.6	3.1	0.03	0.04	0.11	0.01	0.03	0.11	0.08	0.02
Catawba	Hickory City	UM	4,579	27.9	8.1	9.9	1.1	0.02	0.07	0.29	0.00	0.07	0.01	0.15	0.15
Catawba	Newton-Conover City	UM	2,773	19.2	9.4	7.6	-0.1	0.01	0.05	0.20	0.00	0.07	0.05	0.09	0.00
Chatham	Chatham	RP	7,298	24.8	11.1	1.0	2.4	0.02	0.31	0.19	0.06	0.02	0.05	0.13	0.03
Cherokee	Cherokee	RM	3,639	2.8	1.2	2.1	0.9	0.01	0.04	0.05	0.00	0.02	0.03	0.03	0.01
Chowan	Edenton-Chowan	RC	2,460	50.1	0.7	0.2	-0.8	0.05	0.14	0.13	0.00	0.04	0.01	0.12	0.00
Clay	Clay	RM	1,258	1.1	0.4	0.4	0.7			0.03	0.00			0.03	0.00
Cleveland	Cleveland	RM	9,551	23.6	1.2	0.2	2.0	0.03	0.05	0.13	0.00	0.02	0.05	0.07	0.00
Cleveland	Kings Mountain City	UM	4,416	23.8	0.9	2.5	1.8	0.01	0.01	0.10	0.00	0.01	0.03	0.04	0.00
Cleveland	Shelby City	UM	3,205	57.3	1.2	0.7	-0.1	0.03	0.00	0.25	0.00	0.01	0.00	0.18	0.00
Columbus	Columbus	RP	7,310	42.0	2.4	5.6	-0.8	0.06	0.16	0.12	0.07	0.01	0.18	0.10	0.12
Columbus	Whiteville City	UP	2,756	46.1	1.1	1.1	-0.1	0.09	0.00	0.14	0.00	0.02	0.00	0.12	0.00
Craven	Craven	UC	14,769	36.2	2.8	1.2	0.4	0.04	0.11	0.12	0.01	0.01	0.08	0.17	0.00
Cumberland	Cumberland	-	50,927	48.4	5.3	3.3	0.4	0.04	0.16	0.07	0.10	0.02	0.12	0.07	0.08
Currituck	Currituck	RC	3,213	10.6	1.3	0.8	1.6	0.04	0.03	0.07	0.00	0.01	0.05	0.11	0.00
Dare	Dare	RC	4,658	4.9	2.2	0.4	3.0	0.05	0.07	0.10	0.01	0.03	0.07	0.17	0.02
Davidson	Davidson	RP	18,998	2.5	1.1	0.9	1.7	0.05	0.05	0.08	0.02	0.02	0.03	0.04	0.02
Davidson	Lexington City	UP	3,234	47.9	14.6	6.6	1.4	0.11	0.00	0.18	0.00	0.06	0.00	0.09	0.00
Davidson	Thomasville City	UP	2,407	49.1	11.0	1.6	2.2	0.11	0.00	0.18	0.00	0.03	0.00	0.28	0.00
Davie	Davie	RM	5,728	10.1	3.7	0.4	3.2	0.04	0.05	0.21	0.00	0.02	0.06	0.08	0.00
Duplin	Duplin	RC	8,558	36.4	15.2	0.2	0.8	0.05	0.17	0.17	0.17	0.01	0.13	0.13	0.13
Durham	Durham	UP	30,759	59.9	5.8	2.5	1.8	0.05	0.24	0.19	0.10	0.01	0.32	0.12	0.22
Edgecombe	Edgecombe	UC	7,559	58.3	3.5	0.1	-1.0	0.09	0.06	0.13	0.05	0.02	0.05	0.08	0.10
Forsyth	Winston/Salem -Forsyth	-	45,914	39.0	6.5	1.3	2.6	0.06	0.32	0.15	0.11	0.03	0.10	0.15	0.04
Franklin	Franklin	RP	7,651	40.4	4.3	0.8	2.6	0.07	0.05	0.12	0.08	0.02	0.14	0.18	0.10
Gaston	Gaston	UM	30,570	20.7	2.6	1.4	0.9	0.02	0.20	0.13	0.08	0.02	0.19	0.08	0.07
Gates	Gates	RC	2,033	43.7	0.0	0.5	1.3	0.01	0.00	0.09	0.00	0.03	0.00	0.07	0.00

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County	School district	District group	Enrollment	Percentage of Students			Growth rate	2000/01 Segregation in schools				1994/95 Segregation in schools			
				Black	Hispanic	Other NW	95-01*	4th Grade		10th Grade		4th Grade		10th Grade	
								Within	Between	Within	Between	Within	Between	Within	Between
Graham	Graham	RM	1,208	0.4	0.1	12.8	-0.2	0.05	0.00	0.07	0.00	0.04	0.00	0.11	0.00
Granville	Granville	RP	8,121	39.7	3.6	0.6	2.7	0.01	0.10	0.13	0.09	0.04	0.10	0.10	0.04
Greene	Greene	RC	3,007	52.6	10.4	0.2	1.5	0.03	0.00	0.12	0.00	0.02	0.00	0.16	0.00
Guilford	Guilford	-	63,585	41.9	3.3	4.4	2.3	0.04	0.32	0.11	0.26	0.02	0.26	0.11	0.28
Halifax	Halifax	RP	6,008	88.1	0.6	5.5	-0.8	0.03	0.13	0.06	0.02	0.05	0.09	0.03	0.02
Halifax	Roanoke Rapids City	UP	3,061	20.7	0.9	2.0	-0.3	0.03	0.01	0.07	0.00	0.01	0.00	0.07	0.00
Halifax	Weldon City	RP	1,135	94.9	0.2	0.3	-1.3	0.02	0.00	0.03	0.00	0.03	0.01	0.03	0.00
Harnett	Harnett	RP	16,418	32.2	5.8	1.3	3.6	0.03	0.06	0.14	0.01	0.02	0.06	0.10	0.00
Haywood	Haywood	RM	7,777	2.1	1.6	0.8	1.4	0.01	0.03	0.06	0.01	0.02	0.05	0.06	0.00
Henderson	Henderson	RM	11,753	6.5	7.5	1.1	1.6	0.05	0.08	0.32	0.03	0.02	0.10	0.12	0.06
Hertford	Hertford	RC	3,923	80.1	0.5	1.4	-1.7	0.04	0.01	0.17	0.00	0.03	0.04	0.07	0.00
Hoke	Hoke	RP	6,198	49.3	4.8	14.7	1.5	0.02	0.10	0.08	0.00	0.01	0.22	0.08	0.01
Hyde	Hyde	RC	684	46.9	2.3	0.3	-2.5	0.02	0.11	0.07	0.00	0.00	0.19	0.06	0.07
Iredell	Iredell-Statesville	RM	17,692	19.0	4.0	2.7	4.2	0.04	0.19	0.22	0.13	0.02	0.13	0.11	0.13
Iredell	Mooresville City	UM	4,186	18.4	1.2	1.9	4.3	0.01	0.00	0.17	0.00	0.06	0.02	0.15	0.00
Jackson	Jackson	RM	3,532	1.8	1.3	10.6	0.5	0.05	0.17	0.07	0.02	0.01	0.16	0.05	0.02
Johnston	Johnston	RP	21,290	22.3	7.9	0.6	4.7	0.04	0.14	0.18	0.04	0.02	0.08	0.14	0.05
Jones	Jones	RC	1,455	56.2	2.5	0.5	-0.8	0.04	0.14	0.08	0.00	0.02	0.03	0.04	0.00
Lee	Lee	RP	8,871	28.1	14.8	1.3	1.6	0.02	0.05	0.23	0.00	0.01	0.10	0.17	0.00
Lenoir	Lenoir	UC	10,355	52.0	3.5	0.4	-0.1	0.07	0.34	0.19	0.14	0.01	0.41	0.14	0.18
Lincoln	Lincoln	RM	11,046	9.5	6.6	0.8	3.2	0.03	0.10	0.10	0.13	0.02	0.06	0.07	0.06
Macon	Macon	RM	4,020	1.3	1.3	0.9	1.8	0.03	0.02	0.08	0.00	0.05	0.01	0.06	0.01
Madison	Madison	RM	2,529	0.3	0.9	0.2	0.1	0.04	0.02	0.04	0.00	0.03	0.01	0.08	0.00
Martin	Martin	RC	4,767	57.7	1.6	0.3	-0.7	0.05	0.23	0.11	0.24	0.03	0.14	0.13	0.09
Mcdowell	McDowell	RM	6,434	4.9	3.0	2.5	1.1	0.02	0.08	0.09	0.00	0.05	0.08	0.13	0.00
Mecklenburg	Charlotte - Mecklenburg	-	104,260	43.1	5.5	4.9	3.4	0.03	0.24	0.17	0.13	0.03	0.14	0.16	0.10
Mitchell	Mitchell	RM	2,379	0.7	3.0	0.3	0.2	0.05	0.01	0.05	0.00	0.03	0.05		
Montgomery	Montgomery	RP	4,493	28.8	13.8	3.5	1.2	0.01	0.13	0.17	0.02	0.02	0.11	0.10	0.01
Moore	Moore	RP	11,281	25.5	4.8	1.3	2.1	0.02	0.13	0.18	0.03	0.04	0.07	0.12	0.10
Nash	Nash-Rocky Mount	UP	18,707	54.8	3.4	1.4	1.2	0.03	0.27	0.23	0.04	0.01	0.29	0.21	0.06
New Hanover	New Hanover	UC	21,690	29.8	1.5	1.5	0.9	0.07	0.14	0.15	0.12	0.01	0.09	0.11	0.06
Northampton	Northampton	RP	3,605	81.0	0.6	0.1	-0.8	0.01	0.18	0.15	0.04	0.02	0.26	0.11	0.06
Onslow	Onslow	UC	20,937	28.6	4.0	2.7	0.7	0.05	0.13	0.06	0.08	0.02	0.10	0.08	0.08
Orange	Orange	UP	6,637	24.3	3.3	0.9	2.9	0.03	0.04	0.11	0.00	0.03	0.04	0.16	0.00
Orange	Chapel Hill - Carrboro	UP	9,599	18.8	5.2	8.8	3.8	0.06	0.04	0.27	0.00	0.04	0.02	0.22	0.00
Pamlico	Pamlico	RC	2,103	30.4	1.1	1.2	-0.3	0.01	0.04	0.11	0.00	0.03	0.00	0.05	0.00
Pasquotank	Elizabeth City - Pasquota	UC	5,958	49.8	0.7	0.9	-0.6	0.03	0.12	0.17	0.00	0.02	0.09	0.08	0.00
Pender	Pender	RC	6,563	31.6	3.6	0.3	3.3	0.05	0.06	0.13	0.05	0.01	0.11	0.10	0.03
Perquimans	Perquimans	RC	1,776	37.6	0.6	0.3	-1.3	0.05	0.00	0.09	0.00	0.01	0.00	0.16	0.00
Person	Person	RP	5,962	37.6	1.9	0.6	1.8	0.02	0.25	0.10	0.00	0.02	0.18	0.19	0.00
Pitt	Pitt	UC	19,977	51.3	2.6	1.4	0.9	0.02	0.11	0.23	0.06	0.01	0.06	0.23	0.03
Polk	Polk	RM	2,403	10.3	4.9	0.7	2.3	0.02	0.05	0.11	0.00	0.01	0.01	0.09	0.00
Randolph	Randolph	RP	17,244	5.7	5.3	1.1	2.6	0.04	0.10	0.23	0.02	0.03	0.06	0.10	0.06
Randolph	Asheboro City	UP	4,283	17.3	20.0	2.7	1.9	0.03	0.04	0.47	0.00	0.00	0.04	0.16	0.00
Richmond	Richmond	RP	8,295	41.5	2.6	2.6	0.1	0.05	0.04	0.16	0.00	0.03	0.06	0.11	0.00
Robeson	Robeson	RP	23,980	31.8	2.8	43.5	0.8	0.04	0.25	0.11	0.12	0.02	0.28	0.10	0.18
Rockingham	Rockingham	RP	14,585	26.5	3.1	0.7	0.4	0.02	0.14	0.10	0.08	0.02	0.10	0.08	0.09
Rowan	Rowan-Salisbury	RP	20,359	23.3	3.9	1.6	1.9	0.04	0.24	0.12	0.23	0.01	0.25	0.08	0.26
Rutherford	Rutherford	RM	10,171	17.1	1.8	0.5	0.5	0.02	0.22	0.11	0.03	0.02	0.13	0.13	0.01

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County	School district	District group	Enrollment	Percentage of Students			Growth rate	2000/01 Segregation in schools				1994/95 Segregation in schools			
				Black	Hispanic	Other NW	95-01*	4th Grade		10th Grade		4th Grade		10th Grade	
								Within	Between	Within	Between	Within	Between	Within	Between
Sampson	Sampson	RP	7,863	33.2	12.8	1.4	2.2	0.04	0.09	0.16	0.07	0.02	0.13	0.08	0.10
Sampson	Clinton City	UP	2,599	49.4	6.2	4.5	0.4	0.04	0.00	0.31	0.00	0.01	0.00	0.26	0.00
Scotland	Scotland	RP	7,135	47.9	0.7	11.5	0.0	0.06	0.15	0.17	0.08	0.02	0.13	0.15	0.01
Stanly	Stanly	RP	10,170	16.6	2.4	4.3	1.6	0.05	0.21	0.16	0.15	0.13	0.07	0.05	0.07
Stokes	Stokes	RP	7,332	6.0	1.4	0.2	1.9	0.06	0.09	0.06	0.04	0.05	0.09	0.04	0.00
Surry	Surry	RM	8,432	4.7	8.6	0.8	1.5	0.04	0.08	0.32	0.01	0.02	0.02	0.42	0.01
Surry	Elkin City	RM	1,116	6.5	8.9	0.5	1.3	0.04	0.00	0.39	0.00	0.01	0.00	0.10	0.00
Surry	Mount Airy City	UM	1,901	12.5	4.8	6.3	-0.1	0.04	0.00	0.19	0.00	0.02	0.03	0.07	0.00
Swain	Swain	RM	1,749	0.8	1.1	20.8	1.1	0.02	0.09	0.10	0.00	0.04	0.13	0.06	0.00
Transylvania	Transylvania	RM	4,069	7.6	0.6	0.7	0.5	0.03	0.04	0.04	0.03	0.04	0.03	0.05	0.04
Tyrrell	Tyrrell	RC	726	47.2	2.5	0.3	-0.8	0.16	0.00	0.12	0.00	0.00	0.00	0.11	0.00
Union	Union	RP	23,007	18.2	5.6	0.8	4.6	0.03	0.34	0.09	0.32	0.01	0.24	0.08	0.26
Vance	Vance	RP	8,317	63.2	4.0	0.6	2.5	0.01	0.15	0.13	0.01	0.02	0.16	0.16	0.00
Wake	Wake	-	98,975	27.7	4.6	4.2	4.2	0.05	0.10	0.17	0.07	0.02	0.06	0.16	0.05
Warren	Warren	RP	3,248	72.4	1.0	7.0	1.0	0.03	0.04	0.09	0.00	0.01	0.20	0.08	0.00
Washington	Washington	RC	2,289	71.4	1.0	0.3	-2.3	0.10	0.14	0.10	0.05	0.00	0.03	0.14	0.06
Watauga	Watauga	RM	4,891	2.5	1.0	0.6	0.3	0.02	0.06	0.06	0.00	0.03	0.01	0.04	0.00
Wayne	Wayne	UC	19,419	45.4	4.5	1.1	0.8	0.04	0.28	0.08	0.27	0.05	0.12	0.08	0.27
Wilkes	Wilkes	RM	10,384	5.7	3.7	0.5	1.0	0.04	0.11	0.23	0.16	0.02	0.20	0.14	0.13
Wilson	Wilson	UC	12,582	54.3	6.0	0.6	0.9	0.05	0.32	0.12	0.05	0.01	0.06	0.19	0.00
Yadkin	Yadkin	RM	5,845	4.6	8.9	0.4	2.3	0.02	0.07	0.33	0.00	0.01	0.03	0.11	0.00
Yancey	Yancey	RM	2,505	1.0	3.6	0.3	1.0	0.07	0.02	0.03	0.00	0.01	0.05	0.07	0.00
State of NC			1,281,201	31.1	4.4	3.3	1.9	0.04	0.16	0.15	0.09	0.02	0.12	0.12	0.08

* Exponential growth rate in enrollment 1994/95 - 2000/01.

Source: North Carolina Department of Public Instruction, North Carolina Education Research Data Center; School Activity Report, Membership Data and NC Public Schools Statistical Profile, 1994/95 and 2000/01; authors' calculations.

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